

## STATE OF MICHIGAN



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Surface Water Quality Division  
 Southeast Michigan District Headquarters  
 38980 Seven Mile Road  
 Livonia, Michigan 48152

May 6, 1991

US EPA RECORDS CENTER REGION 5



406685

Mr. Thomas Ray, Manager  
 Environmental Affairs  
 Atochem North America, Inc.  
 17168 West Jefferson Ave.  
 Riverview, Michigan 48192-4270

RE: Atochem  
 NPDES MI0002381  
 CSI-1990

Dear Mr. Ray:

On May 22 and 23, 1990, this office conducted a Compliance Sampling Inspection (CSI) at the Atochem North America, Inc., Organics Division Plant located at 17168 West Jefferson Avenue in Riverview, Michigan. The purpose of the inspection was to determine by sampling, site evaluation and records review your facility's compliance with National Pollutant Discharge Elimination System (NPDES) requirements. A copy of the sampling survey inspection report is attached for your review. Our comments on the records review and site evaluation portion of the inspection was transmitted to you on July 2, 1990.

Our samples met the NPDES permit, MI0002381, final effluent limitations during the survey with one exception. The daily maximum limits for total phenol, concentration and loading, were exceeded during the survey. The concentration limit is 9 ug/l and our composite sample contained 26 ug/l of total phenol. The loading was calculated to be 1.8 lbs/day while the limit is 1.1 lbs/day. The intake water contained 12 ug/l of total phenol during the same period.

Our composite sample of the effluent was split with you after the inspection. The analytical results of that sample from your laboratory as submitted to us on June 15, 1990 compare very well with the results from our laboratory.

Mr. Thomas Ray  
May 6, 1991  
Page 2

The effluent, in addition to the permit parameters, was analyzed for a number of pollutants including organic compounds, metals and nutrients. The pollutants were either below levels of detection or below levels of concern. The data will, however, be further reviewed by Division toxicologists and you will be advised if additional monitoring or regulation is needed.

The report also contains tabulated sample data from a CSI that was conducted at the plant on November 11 and 12, 1987. A review of our files found that this data had not previously been transmitted to you.

Thank you for your cooperation during the survey. Feel free to contact us if you have any questions.

Sincerely,



Roy E. Schrameck, Supervisor  
Surface Water Quality Division  
Southeast Michigan District  
(313) 953-0241

by:



William E. Stone  
Environmental Quality Analyst  
(313) 953-1438

RES/WES  
Enclosure  
cc: Water Quality Studies  
Water Quality Appraisal  
Permits

MICHIGAN DEPARTMENT OF NATURAL RESOURCES  
ENVIRONMENTAL PROTECTION BUREAU  
SURFACE WATER QUALITY DIVISION

Report of a Compliance Sampling Inspection

Conducted at

ATOCHEM NORTH AMERICA, INC.

All Outfalls No.820298  
NPDES Permit No. MI0002381

Wayne County  
Wyandotte, Michigan

May 22, 1990

ATOCHEM

Inspection Comments

A Compliance Sampling Inspection (CSI) was conducted at ATOCHEM North America, Inc., Organics Division Plant, 171 Jefferson Avenue, Riverview, Michigan. Wastewater sampling was performed during one twenty-four hour survey period on May 22, 1990.

The survey results are compared to the facility's Pollutant Discharge Elimination System (NPDES) permit effluent limitations in Table 3 (page 14). The facility met the final permit limitations with one exception. The maximum limits for total phenol, concentration allowed exceeded during the survey. The concentration of total phenol in the composite sample contained 26 ug/l of total phenol. The loading rate was calculated to be 1.8 lbs/day using the recorded flow of 8.3 MGD. The limit was 1.1 lbs/day. The water contained 12 ug/l of total phenol during the survey.

The results of this survey are compared to the facility's self-monitoring results for May 22 and 23 in Table 2. The self-monitoring data as reported in the facility's Monitoring Reports is very similar to the survey results.

Table 3 also contains a summary of the facility's self-monitoring data for the period June 1, 1989 to June 1, 1990. When compared with our sampling results indicated that the inspection was done during a typical discharge. The summary shows, also, that the facility effluent is generally consistent and meets effluent limitations.

Samples of the plant final effluent (outfall 00) were analyzed for a variety of parameters. The concentrations were higher than those limited by the permit including metals and organic nutrients. The composite data are presented in Table 3 (pages 6 - 9). Table 2 (pages 10 - 13) gives the detailed results. All parameters were either below levels or above levels of concern.

Surficial sludge from Monguagon Creek near the plant was sampled and analyzed for metals and organics. The results are presented in Table 2 (pages 12 and 13).

Inspection Comments (cont.)

The composite sample collected from the effluent and the sludge sample from the creek were split with the permittee for a comparison of analytical results. The permittee's portions of the samples were analyzed for the parameters listed in Table 4 (page 15), in their laboratory. The other portions were analyzed at the Environmental Protection Bureau Laboratory in Lansing. The results of the effluent sample compare very well. However, our laboratory reported concentrations of metals in the sludge two to three times greater than those reported by the Company.

A CSI had previously been conducted at the plant on November 11 and 12, 1987. The composite data are from that survey are presented in Table 5 (pages 16 - 19). Table 2 (pages 20 - 24) gives the grab sample results from the effluent, the intake and river sludge. The results of this previous survey are nearly identical to the results of the May 22 and 23, 1990, CSI.

Plant Process

The Atochem North America, Inc., plant produces about 100 different compounds. Major products are alkylamines and rubber compounds which are made from ammonia and alcohols. The location of the plant is shown in Figure 1 (page 5).

Water Supply

All process and cooling water used in the plant is obtained through an intake on the Trenton Channel of the Detroit River. The raw water is chlorinated continuously during the summer, beginning in early May.

Domestic water is purchased from the City of Detroit. Sanitary wastes are discharged to the Detroit sanitary sewer system.

Wastewater Treatment System

All process and cooling waters at the plant are treated in a series of lagoons. A diagram of the treatment system is given in Figure 1 (page 5). Pond 1 receives wastes from the pilot plant operation. Phenolic wastes are batch discharged via a sump to Pond 2 for equalization. The waste is tested in the sump prior to discharge to the pond and if results are high the waste is bled to the pond or trucked off-site for disposal. These wastes are combined with other waste streams in Pond 3. The pH is

Wastewater Treatment System (cont.)

adjusted with acid or caustic prior to Pond 4 where oils are removed and final settling occurs. The effluent from Pond 4, the treated process wastes, is mixed with the cooling water (55% of total flow). Discharge of the combined effluent is to Monguagon Creek, a small tributary of the Trenton Channel of the Detroit River, via outfall 001.

Survey Procedure

The flows and samples were obtained as follows:

| <u>Sample Location</u>  | <u>Flow Measurement</u> | <u>Sampling Methods</u>                                 |
|---|-------------------------|---|
| Intake<br>at screens  | -                       | automatic sampler<br>grab composite<br>individual grabs |
| Outfall 001<br>at outfall pipe                                  | Facility DMR            | automatic sampler<br>grab composite<br>individual grabs |
| Sludge<br>at sheet piling<br>just downstream of<br>outfall pipe | -                       | individual grab   |

Composite samples for most parameters were collected with an ISCO automatic sampler. The extractable organic composite samples were grab composites consisting of three equal volume and evenly spaced individual grabs mixed into one sample container.

The automatic samplers collected and composited ~70 ml of sample into a single, new 8 liter plastic container every 15 minutes during the survey period. The sample delivery line was new 3/8 inch polyethylene tubing. The tubing in the sampler's peristaltic pump was clean new medical grade silicon tubing.

An individual grab is a single instantaneous sample. The grab samples were collected with clean glass and clean stainless steel samplers.

Survey Procedure (cont.)

Dissolved oxygen concentrations, temperature and pH were determined in the field. The pH meter, a Sargent-Welch Model PBL, was calibrated each day using pH buffers of 4, 7 and 10. The YSI Model 57 dissolved oxygen meter was calibrated daily using the air calibration technique and Winkler method. Calibrations were recorded in a journal. The total residual chlorine concentration was determined with a Fisher Porter amperometric titrator.

Samples were analyzed by the Environmental Protection Bureau Laboratories located in Lansing.

Samples were preserved according to Table 7 (page 25). Letter codes for laboratory results and symbols used in the report are defined in Table 7.

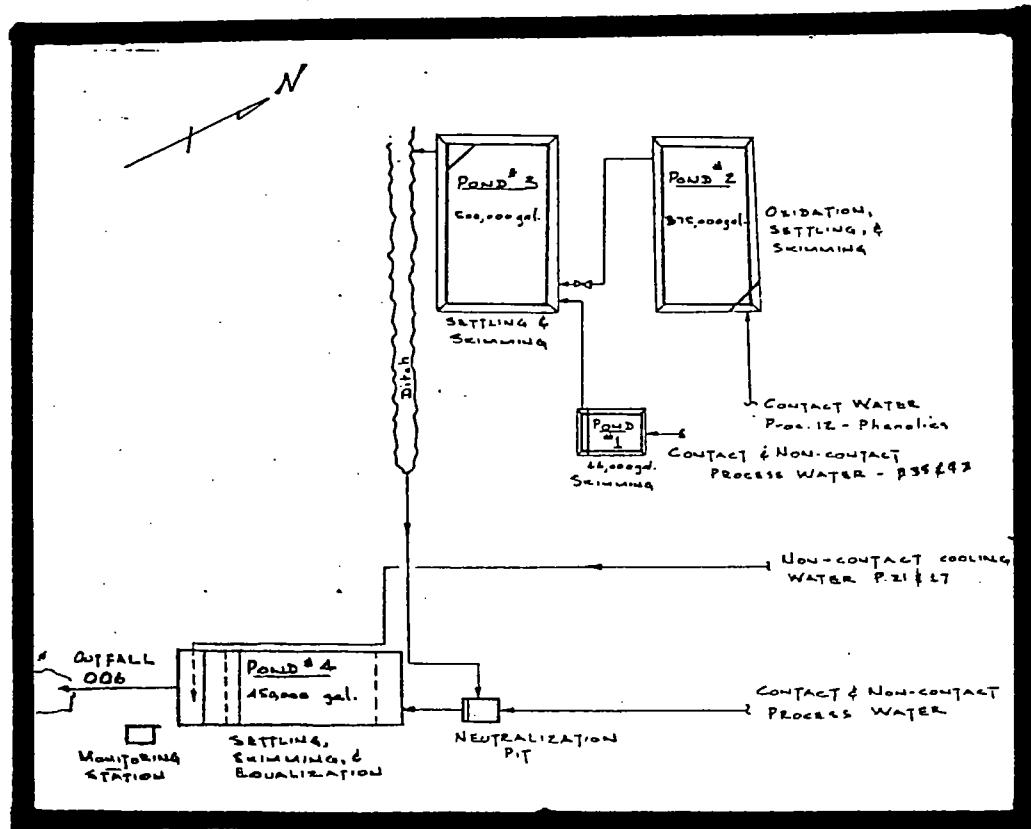
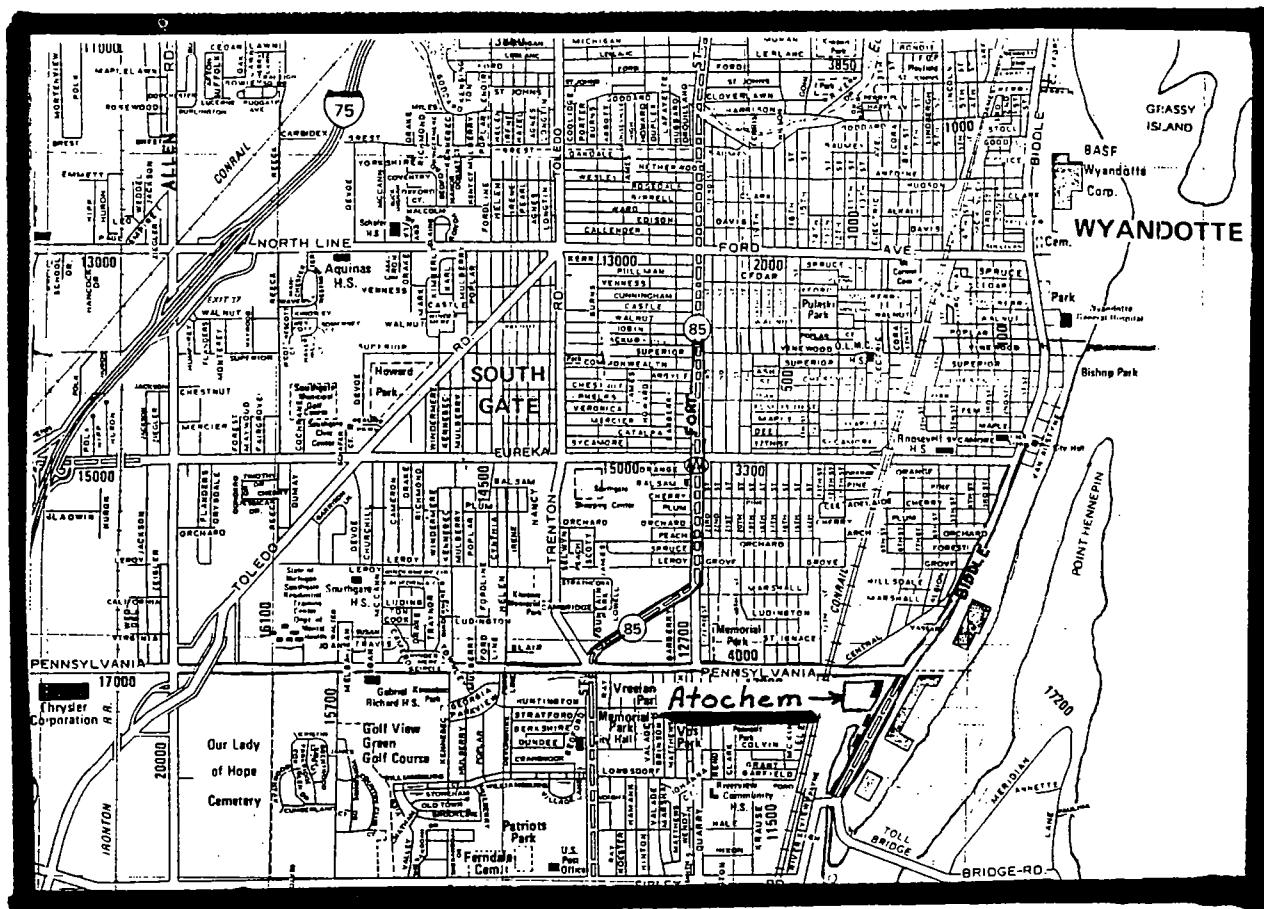


Figure 1:

Location of Atochem and diagram of treatment system.

TABLE 1 - Analyses of Composite Samples

| Outfall            | 001           | INTAKE        |
|--------------------|---------------|---------------|
| Survey Period From | 05/22/90 0945 | 05/22/90 1015 |
| To                 | 05/23/90 0845 | 05/23/90 1400 |
| Computed Flow Rate | 8.3 MGD       |               |

|                                   | mg/l   | lbs/day | mg/l   | lbs/day |
|-----------------------------------|--------|---------|--------|---------|
| Alkalinity (CaCO <sub>3</sub> )   | 81     | NA      | 81     | NA      |
| BOD-5                             | 20 LP  | NA      | 4 LP   | NA      |
| CBOD-5                            | 19     | 1315.2  | -      | NA      |
| Calcium                           | 28.6   | 1979.7  | 29.4   | NA      |
| Chloride                          | 41     | 2838.1  | 16     | NA      |
| COD                               | 21     | 1453.7  | 10     | NA      |
| Conductivity (uMHOS/cm)           | 359    | NA      | 274    | NA      |
| Total Cyanide                     | <0.005 | NA      | <0.005 | NA      |
| Hardness (CaCO <sub>3</sub> )     | 104    | NA      | 105    | NA      |
| Magnesium                         | 7.8    | 539.9   | 7.6    | NA      |
| NO <sub>3</sub> + NO <sub>2</sub> | 0.35   | 24.2    | 0.34   | NA      |
| Ammonia as N                      | 0.64   | 44.3    | 0.3    | NA      |
| Kjeldahl Nitrogen                 | 2.3    | 159.2   | 0.78   | NA      |
| Orthophosphorus                   | -      | NA      | <0.01  | NA      |
| Total Phosphorus                  | 0.11   | 7.6     | 0.04   | NA      |
| Reactive Silicon                  | 0.69   | 47.8    | 0.65   | NA      |
| Suspended Solids                  | 13     | 899.9   | 11     | NA      |
| Dissolved Solids                  | 190    | 13152.2 | 160    | NA      |
| Sulfate                           | 22     | 1522.9  | 19     | NA      |
| TOC                               | 9.6    | 664.5   | 2.8    | NA      |
| Turbidity                         | 6.1    | 422.3   | 6.1    | NA      |

|                            | ug/l | lbs/day | ug/l | lbs/day |
|----------------------------|------|---------|------|---------|
| Phenols (4AAP)             | 26   | NA      | 12   | NA      |
| Total Silver (Ag)          | -    | NA      | <0.5 | NA      |
| Total Cadmium (Cd)         | 0.9  | NA      | 0.5  | NA      |
| Total Chromium (Cr)        | 1.2  | NA      | 1    | NA      |
| Hexavalent Chromium (Cr+6) | <5   | NA      | <5   | NA      |
| Total Copper (Cu)          | 3.6  | NA      | 3.2  | NA      |
| Total Mercury (Hg)         | <0.5 | NA      | <0.5 | NA      |
| Total Nickel (Ni)          | 2.9  | NA      | 3.5  | NA      |
| Total Lead (Pb)            | 1.7  | NA      | 1.2  | NA      |
| Total Zinc (Zn)            | 27.2 | NA      | 18   | NA      |

## ATOCHEM

TABLE 1 (cont.) - Analysis of Composite Samples

|                    |                    |
|--------------------|--------------------|
| Outfall            | 001                |
| Survey Period      | From 05/22/90 0945 |
|                    | To 05/23/90 0930   |
| Computed Flow Rate | 8.3 MGD            |

## GC/MS Base/Neutrals

| Dilution Factor             | 1.1 | ug/l | lbs/day | < |
|-----------------------------|-----|------|---------|---|
| Bis(2-chloroethyl)ether     | <   | 2.2  | NA      | < |
| 1,3-Dichlorobenzene         | <   | 2.2  | NA      | < |
| 1,4-Dichlorobenzene         | <   | 2.2  | NA      | < |
| 1,2-Dichlorobenzene         | <   | 2.2  | NA      | < |
| Bis(2-chloroisopropyl)ether | <   | 5.5  | NA      | < |
| N-Nitroso-di-n-propylamine  | <   | 5.5  | NA      | < |
| Hexachloroethane            | <   | 5.5  | NA      | < |
| Nitrobenzene                | <   | 2.2  | NA      | < |
| Isophorone                  | <   | 1.1  | NA      | < |
| Bis(2-chloroethoxy)methane  | <   | 2.2  | NA      | < |
| 1,2,4-Trichlorobenzene      | <   | 2.2  | NA      | < |
| Naphthalene                 | <   | 1.1  | NA      | < |
| Hexachlorobutadiene         | <   | 5.5  | NA      | < |
| Hexachlorocyclopentadiene   | <   | 5.5  | NA      | < |
| 2-Chloronaphthalene         | <   | 2.2  | NA      | < |
| Dimethylphthalate           | <   | 2.2  | NA      | < |
| Acenaphthylene              | <   | 1.1  | NA      | < |
| 2,6-Dinitrotoluene          | <   | 5.5  | NA      | < |
| Acenaphthene                | <   | 2.2  | NA      | < |
| 2,4-Dinitrotoluene          | <   | 5.5  | NA      | < |
| Fluorene                    | <   | 2.2  | NA      | < |
| Diethylphthalate            | <   | 2.2  | NA      | < |
| 4-Chlorodiphenyl ether      | <   | 5.5  | NA      | < |
| N-Nitrosodiphenyl amine     | <   | 2.2  | NA      | < |
| 1,2-Diphenylhydrazine       | <   | 2.2  | NA      | < |
| 4-Bromodiphenyl ether       | <   | 5.5  | NA      | < |
| Hexachlorobenzene           | <   | 5.5  | NA      | < |
| Phenanthrene                | <   | 1.1  | NA      | < |
| Anthracene                  | <   | 1.1  | NA      | < |
| Di-n-butylphthalate         | <   | 1.1  | NA      | < |
| Fluoranthene                | <   | 1.1  | NA      | < |
| * Benzidine                 | <   | 16.5 | NA      | < |
| Pyrene                      | <   | 1.1  | NA      | < |
| Butyl benzyl phthalate      | <   | 2.2  | NA      | < |
| Benzo(a)anthracene          | <   | 2.2  | NA      | < |
| * 3,3'-Dichlorobenzidine    | <   | 11   | NA      | < |
| Chrysene                    | <   | 2.2  | NA      | < |
| Bis(2-ethylhexyl)phthalate  | <   | 2.2  | NA      | < |
| Di-n-octylphthalate         | <   | 2.2  | NA      | < |
| Benzo(b)fluoranthene        | <   | 2.2  | NA      | < |
| Benzo(k)fluoranthene        | <   | 2.2  | NA      | < |
| Benzo(a)pyrene              | <   | 2.2  | NA      | < |
| Indeno(1,2,3-c,d)pyrene     | <   | 5.5  | NA      | < |
| Dibenzo(a,h)anthracene      | <   | 5.5  | NA      | < |
| Benzo(g,h,i)perylene        | <   | 5.5  | NA      | < |

\* Seldomly encountered, reported semi-quantitatively.

TABLE 1 (cont.) - Analysis of Composite Samples

|                    |               |               |
|--------------------|---------------|---------------|
| Outfall            | 001           | INTAKE        |
| Survey Period From | 05/22/90 0945 | 05/22/90 1015 |
| To                 | 05/23/90 0930 | 05/23/90 1400 |
| Computed Flow Rate | 8.3 MGD       |               |

## Scan 3 - Chlorinated Hydrocarbons, PCBs &amp; Organochlorine Pesticides

| Dilution Factor            | 1.1     | 1       |        |         |
|----------------------------|---------|---------|--------|---------|
|                            | ug/l    | lbs/day | ug/l   | lbs/day |
| 1,3-Dichlorobenzene        | < 0.11  | NA      | < 0.1  | NA      |
| 1,4-Dichlorobenzene        | < 0.11  | NA      | < 0.1  | NA      |
| 1,2-Dichlorobenzene        | < 0.44  | NA      | < 0.1  | NA      |
| Hexachloroethane           | < 0.011 | NA      | < 0.01 | NA      |
| 1,3,5-Trichlorobenzene     | < 0.044 | NA      | < 0.01 | NA      |
| 1,2,4-Trichlorobenzene     | < 0.66  | NA      | < 0.01 | NA      |
| 1,2,3-Trichlorobenzene     | < 0.22  | NA      | < 0.01 | NA      |
| Hexachlorobutadiene        | < 0.011 | NA      | < 0.01 | NA      |
| 1,2,4,5-Tetrachlorobenzene | < 0.011 | NA      | < 0.01 | NA      |
| Hexachlorocyclopentadiene  | < 0.011 | NA      | < 0.01 | NA      |
| 2-Chloronaphthalene        | < 0.22  | NA      | < 0.2  | NA      |
| 1,2,3,4-Tetrachorobenzene  | < 0.011 | NA      | < 0.01 | NA      |
| Pentachlorobenzene         | < 0.011 | NA      | < 0.01 | NA      |
| a-BHC                      | < 0.011 | NA      | < 0.01 | NA      |
| Hexachlorobenzene          | < 0.011 | NA      | < 0.01 | NA      |
| b-BHC                      | < 0.011 | NA      | < 0.01 | NA      |
| g-BHC (lindane)            | < 0.011 | NA      | < 0.01 | NA      |
| Pentachloronitrobenzene    | < 0.011 | NA      | < 0.01 | NA      |
| d-BHC                      | < 0.011 | NA      | < 0.01 | NA      |
| Heptachlor                 | < 0.011 | NA      | < 0.01 | NA      |
| Aldrin                     | < 0.011 | NA      | < 0.01 | NA      |
| Heptachlor epoxide         | < 0.011 | NA      | < 0.01 | NA      |
| g-Chlordane                | < 0.011 | NA      | < 0.01 | NA      |
| Endosulfan I               | < 0.011 | NA      | < 0.01 | NA      |
| a-Chlordane                | < 0.011 | NA      | < 0.01 | NA      |
| 4,4'-DDE                   | < 0.011 | NA      | < 0.01 | NA      |
| Endrin                     | < 0.011 | NA      | < 0.01 | NA      |
| Dieldrin                   | < 0.22  | NA      | < 0.01 | NA      |
| 4,4'-DDD                   | < 0.011 | NA      | < 0.01 | NA      |
| 1,4'-DDT                   | < 0.011 | NA      | < 0.01 | NA      |
| 4,4'-DDT                   | < 0.011 | NA      | < 0.01 | NA      |
| Hexabromobenzene           | < 0.011 | NA      | < 0.01 | NA      |
| Methoxychlor               | < 0.011 | NA      | < 0.01 | NA      |
| Mirex                      | < 0.011 | NA      | < 0.01 | NA      |
| Aroclor 1242               | < 0.055 | NA      | < 0.05 | NA      |
| Aroclor 1254               | < 0.055 | NA      | < 0.05 | NA      |
| Aroclor 1260               | < 0.055 | NA      | < 0.05 | NA      |
| *Aroclor 1016              | < 0.055 | NA      | < 0.05 | NA      |
| *Aroclor 1221              | < 0.055 | NA      | < 0.05 | NA      |
| *Aroclor 1232              | < 0.055 | NA      | < 0.05 | NA      |
| *Aroclor 1248              | < 0.055 | NA      | < 0.05 | NA      |
| *Aroclor 1262              | < 0.055 | NA      | < 0.05 | NA      |
| *Aroclor 1268              | < 0.055 | NA      | < 0.05 | NA      |
| BP-6 (PBB)                 | < 0.055 | NA      | < 0.05 | NA      |
| *Toxaphene                 | < 0.055 | NA      | < 0.05 | NA      |

\* Seldomly encountered, reported semi-quantitatively

TABLE 1 (cont.) - Analysis of Composite Samples

|                       |         |                                       |  |
|-----------------------|---------|---------------------------------------|--|
| Outfall Survey Period | From To | 001<br>05/22/90 0945<br>05/23/90 0930 | INTAKE<br>05/22/90 1015<br>05/23/90 1400 |
| Computed Flow Rate    |         | 8.3 MGD                               |  |

## Scan 8 - Phenols

| Dilution Factor            | 1.1  | 1.1     |      |          |
|----------------------------|------|---------|------|----------|
|                            | ug/l | lbs/day | ug/l | lbs/day  |
| Phenol                     | <    | 11      | NA   | < 11 NA  |
| 2-Chlorophenol             | <    | 11      | NA   | < 11 NA  |
| 2-Nitrophenol              | <    | 11      | NA   | < 11 NA  |
| 2,4-Dimethylphenol         | <    | 11      | NA   | < 11 NA  |
| 2,4-Dichlorophenol         | <    | 11      | NA   | < 11 NA  |
| 4-Chloro-3-methylphenol    | <    | 11      | NA   | < 11 NA  |
| * 3-Phenylpropionic acid   | <    | 44      | NA   | < 44 NA  |
| 2,4,6-Trichlorophenol      | <    | 11      | NA   | < 11 NA  |
| 2,4,5-Trichlorophenol      | <    | 11      | NA   | < 11 NA  |
| 2,4-Dinitrophenol          | <    | 270     | NA   | < 270 NA |
| 4-Nitrophenol              | <    | 110     | NA   | < 110 NA |
| 2-Methyl-4,6-dinitrophenol | <    | 110     | NA   | < 110 NA |
| Pentachlorophenol          | <    | 110     | NA   | < 110 NA |

\* Seldom encountered, reported semi-quantitatively.

TABLE 2 - Analyses of Grab Samples

| Outfall        | 001      | 001      | 001      | INTAKE   |
|----------------|----------|----------|----------|----------|
| Date Collected | 05/22/90 | 05/22/90 | 05/23/90 | 05/22/90 |
| Time Collected | 0945     | 2130     | 0930     | 1015     |

|                                   | mg/l | mg/l | mg/l | mg/l |
|-----------------------------------|------|------|------|------|
| Temperature (F)                   | 70   | 72   | 72   | 58   |
| pH (S.U.)                         | 7    | 7    | -    | 6.9  |
| Chlorine (Cl2)                    | 0    | 0    | 0    | 0    |
| Dissolved Oxygen                  | 8.1  | 8.4  | 8.1  | 10.1 |
| BOD-5                             | 10   | 22   | 30   | -    |
| COD                               | 14   | 18   | 40   | 6    |
| NO <sub>3</sub> + NO <sub>2</sub> | 0.94 | 0.35 | 0.51 | 0.35 |
| Ammonia as N                      | 0.71 | 0.66 | 0.53 | 0.3  |
| Kjeldahl Nitrogen                 | 2.1  | 3.2  | 4.6  | 0.6  |
| Total Phosphorus                  | 0.06 | 0.36 | 0.18 | 0.03 |
| Suspended Solids                  | 13   | 14   | 15   | 9    |
| Dissolved Solids                  | 170  | 150  | 2200 | 100  |
| TOC                               | 6.8  | 13   | 21   | 2.4  |
| Turbidity                         | 6.5  | 5.6  | 6    | 5.7  |

|                     | ug/l | ug/l | ug/l | ug/l |
|---------------------|------|------|------|------|
| Phenols (4AAP)      | 33   | 17   | 10   | 2.5  |
| Total Cadmium (Cd)  | 1.2  | 0.3  | 0.2  | 0.4  |
| Total Chromium (Cr) | <1   | <1   | 1.2  | 1.1  |
| Total Copper (Cu)   | 4.1  | 2.7  | 2.7  | 2.7  |
| Total Mercury (Hg)  | <0.5 | <0.5 | <0.5 | <0.5 |
| Total Nickel (Ni)   | 3.1  | 2.3  | 2.2  | 3.4  |
| Total Lead (Pb)     | 1.4  | 1.5  | 1.3  | 1.5  |
| Total Zinc (Zn)     | 36.1 | 32.8 | 20.2 | 11.5 |

| Outfall        | INTAKE   |
|----------------|----------|
| Date Collected | 05/23/90 |
| Time Collected | 0830     |

|                  | mg/l |
|------------------|------|
| Temperature (F)  | 56   |
| pH (S.U.)        | 7.1  |
| Chlorine (Cl2)   | 0    |
| Dissolved Oxygen | 10   |

TABLE 2 (cont.) - Analysis of Grab Samples

| Outfall        | 001      | 001      | 001      | INTAKE   |
|----------------|----------|----------|----------|----------|
| Date Collected | 05/22/90 | 05/22/90 | 05/23/90 | 05/22/90 |
| Time Collected | 0945     | 2130     | 0930     | 1015     |

## Scan 1 - Purgeable Halocarbons

| Dilution Factor           | 1      | 1      | 1      | 1    |
|---------------------------|--------|--------|--------|------|
|                           | ug/l   | ug/l   | ug/l   | ug/l |
| Vinyl chloride            | < 5    | < 5    | < 5    | < 5  |
| Bromomethane              | < 5    | < 5    | < 5    | < 5  |
| Chloroethane              | < 5    | < 5    | < 5    | < 5  |
| Trichlorofluoromethane    | < 5    | < 5    | < 5    | < 5  |
| 1,1-Dichloroethene        | < 1    | < 1    | < 1    | < 1  |
| Methylene chloride        | < 5    | < 5    | < 5    | < 5  |
| trans-1,2-Dichloroethene  | < 1    | < 1    | < 1    | < 1  |
| 1,1-Dichloroethane        | < 1    | < 1    | < 1    | < 1  |
| cis-1,2-Dichloroethene    | < 1    | < 1    | < 1    | < 1  |
| Chloroform                | 8.6 UC | 5.2 UC | 4.7 UC | < 1  |
| 1,1,1-Trichloroethane     | < 1    | < 1    | < 1    | < 1  |
| Carbon Tetrachloride      | < 1    | < 1    | < 1    | < 1  |
| 1,2-Dichloroethane        | < 1    | < 1    | < 1    | < 1  |
| Trichloroethene           | < 1    | < 1    | < 1    | < 1  |
| 1,2-Dichloropropane       | < 1    | < 1    | < 1    | < 1  |
| Bromodichloromethane      | < 1    | < 1    | < 1    | < 1  |
| cis-1,3-Dichloropropene   | < 1    | < 1    | < 1    | < 1  |
| trans-1,3-Dichloropropene | < 1    | < 1    | < 1    | < 1  |
| 1,1,2-Trichloroethane     | < 1    | < 1    | < 1    | < 1  |
| Tetrachloroethene         | < 1    | < 1    | < 1    | < 1  |
| Dibromochloromethane      | 2.7 UC | 2.9 UC | 3.5 UC | < 1  |
| Chlorobenzene             | < 5    | < 5    | < 5    | < 5  |
| Bromoform                 | < 1    | < 1    | < 1    | < 1  |
| 1,1,2,2-Tetrachloroethane | < 1    | < 1    | < 1    | < 1  |

## Scan 2 - Purgeable Aromatic Hydrocarbons

| Dilution Factor              | 1    | 1    | 1    | 1    |
|------------------------------|------|------|------|------|
|                              | ug/l | ug/l | ug/l | ug/l |
| Benzene                      | < 1  | < 1  | < 1  | < 1  |
| Toluene                      | < 1  | < 1  | < 1  | < 1  |
| Ethylbenzene                 | < 1  | < 1  | < 1  | < 1  |
| Xylene isomers (o, m, and p) | < 1  | < 1  | < 1  | < 1  |

**TABLE 2 (cont.) - Analyses of Grab Samples**

|                                   |                             |
|-----------------------------------|-----------------------------|
| Type of Sludge                    | MONGUAGON CREEK<br>SEDIMENT |
| Date Collected                    | 05/23/90                    |
| Time Collected                    | 0930                        |
|                                   |                             |
| Total Solids - Inorganic (%TS)    | 33.7                        |
| Cadmium in Sediment (mg/kg) dry   | 6.1                         |
| Chromium in Sediment (mg/kg) dry  | 183                         |
| Copper in Sediment (mg/kg) dry    | 148                         |
| Mercury in Sediment (mg/kg) dry   | 2.2                         |
| Nickel in Sediment (mg/kg) dry    | 300                         |
| Lead in Sediment (mg/kg) dry      | 174                         |
| Zinc in Sediment (mg/kg) dry      | 3000                        |
| Phenolics in Sediment (mg/kg) dry | 2.1                         |

TABLE 2 (cont.) - Analysis of Grab Samples

|                |                 |
|----------------|-----------------|
| Outfall        | MONGUAGON CREEK |
|                | SEDIMENT        |
| Date Collected | 05/23/90        |
| Time Collected | 0930            |

## GC/MS Base/Neutrals

| Dilution Factor                                       | 500<br>ug/Kg |
|---|--------------|
| Bis(2-chloroethyl)ether                               | < 1000       |
| 1,3-Dichlorobenzene                                   | < 1000       |
| 1,4-Dichlorobenzene                                   | < 1000       |
| 1,2-Dichlorobenzene                                   | < 1000       |
| Bis(2-chloroisopropyl)ether                           | < 2500       |
| N-Nitroso-di-n-propylamine                            | < 2500       |
| Hexachloroethane                                      | < 2500       |
| Nitrobenzene  | < 1000       |
| Isophorone  | < 500        |
| Bis(2-chloroethoxy)methane                            | < 1000       |
| 1,2,4-Trichlorobenzene                                | < 1000       |
| Naphthalene   | < 500        |
| Hexachlorobutadiene                                   | < 2500       |
| Hexachlorocyclopentadiene                             | < 2500       |
| 2-Chloronaphthalene                                   | < 1000       |
| Dimethylphthalate                                     | < 1000       |
| Acenaphthylene  | < 500        |
| 2,6-Dinitrotoluene                                    | < 2500       |
| Acenaphthene  | < 1000       |
| 2,4-Dinitrotoluene                                    | < 2500       |
| Fluorene  | < 1000       |
| Diethylphthalate                                      | < 1000       |
| 4-Chlorodiphenyl ether                                | < 2500       |
| N-Nitrosodiphenyl amine                               | < 1000       |
| 1,2-Diphenylhydrazine                                 | < 1000       |
| 4-Bromodiphenyl ether                                 | < 2500       |
| Hexachlorobenzene                                     | < 2500       |
| Phenanthrene  | < 500        |
| Anthracene  | < 500        |
| Di-n-butylphthalate                                   | < 500        |
| Fluoranthene  | < 500        |
| * Benzidine   | < 7500       |
| Pyrene  | < 500        |
| Butyl benzyl phthalate                                | < 1000       |
| Benzo(a)anthracene                                    | < 1000       |
| * 3,3'-Dichlorobenzidine                              | < 5000       |
| Chrysene  | < 1000       |
| Bis(2-ethylhexyl)phthalate                            | 2300         |
| Di-n-octylphthalate                                   | < 1000       |
| Benzo(b)fluoranthene                                  | < 1000       |
| Benzo(k)fluoranthene                                  | < 1000       |
| Benzo(a)pyrene  | < 1000       |
| Indeno(1,2,3-c,d)pyrene                               | < 2500       |
| Dibenzo(a,h)anthracene                                | < 2500       |
| Benzo(g,h,i)perylene                                  | < 2500       |
| * Seldomly encountered, reported semi-quantitatively. |              |

TABLE 3 - Comparison of survey results with the facility's NPDES Permit and with self-monitoring data from May 1990 and the previous year.

| Outfall/Parameter (Unit)      | Final Effluent Limitations |               |               |               | May Discharge Monitoring Report |                    |                    |                  |          |          | Survey Results |             | June 1, 1989 to June 1, 1990<br>Summary of Self-Monitoring Data |                               |                              |                 |                 |
|-------------------------------|----------------------------|---------------|---------------|---------------|---------------------------------|--------------------|--------------------|------------------|----------|----------|----------------|-------------|---|-------------------------------|------------------------------|-----------------|-----------------|
|                               | 30-day<br>Avg.             | 7-day<br>Avg. | Daily<br>Min. | Daily<br>Max. | Monthly<br>Average              | Monthly<br>Maximum | Monthly<br>Minimum | 7-day<br>Average | 05/22/90 | 05/23/90 | Composite      | Grab        | Year<br>Average   | Highest<br>Monthly<br>Average | Lowest<br>Monthly<br>Average | Year<br>Maximum | Year<br>Minimum |
|                               | -                          | -             | -             | -             | 8.1                             | 8.9                | -                  | -                | 8.3      | 7.5      | -              | -           | 8.8   | 12.1                          | 7.3                          | 14              | -               |
| <b>Outfall 001</b>            |                            |               |               |               |                                 |                    |                    |                  |          |          |                |             |   |                               |                              |                 |                 |
| Flow (MGD)                    | -                          | -             | -             | -             | 8.1                             | 8.9                | -                  | -                | 8.3      | 7.5      | -              | -           | 8.8   | 12.1                          | 7.3                          | 14              | -               |
| Suspended solids (lbs/d)      | 1568                       | -             | -             | 4525          | 717                             | 1329               | -                  | -                | 1175     | -        | 899            | -           | 800   | 1221                          | 257                          | 2534            | -               |
| Temperature (F)               | -                          | -             | -             | -             | 73                              | -                  | -                  | -                | -        | 75       | -              | -           | 70,72,72  | -                             | 73                           | 47              | -               |
| BOD5 (lbs/d)                  | 1039                       | -             | -             | 2773          | 538                             | 2099               | -                  | -                | -        | 1000     | 1384           | -           | 610   | 1374                          | 353                          | 6697            | -               |
| Chlorides (mg/l)              | -                          | -             | -             | -             | 38                              | -                  | -                  | -                | 39       | -        | 41             | -           | 32  | 58                            | 11                           | -               | -               |
| Total phenol (ug/l)           | 4                          | -             | -             | 9             | 1.6                             | 1.6                | -                  | -                | -        | -        | 26             | -           | 2   | 6.2                           | 0.29                         | 18              | -               |
| Total phenol (lbs/d)          | 0.45                       | -             | -             | 1.1           | 0.08                            | 0.08               | -                  | -                | -        | -        | 1.8            | -           | 0.16  | 0.38                          | 0.07                         | 1.2             | -               |
| Ammonia as N (mg/l)           | -                          | -             | -             | -             | 0.69                            | -                  | -                  | -                | -        | -        | 0.64           | -           | 0.6   | 0.92                          | 0.42                         | -               | -               |
| Total residual chlorine(mg/l) | -                          | -             | -             | 0.036         | -                               | 0                  | -                  | -                | -        | 0.005    | -              | 0,0,0       | 0.008   | -                             | -                            | 0.04            | 0               |
| Dissolved oxygen (mg/l)       | -                          | -             | -             | 4             | -                               | -                  | -                  | -                | -        | 8        | -              | 8.1,8.4,8.1 | -   | -                             | -                            | -               | 7               |
| pH (SU)                       | -                          | -             | 6.5           | 9             | -                               | 9                  | 6.8                | -                | 7.6      | 7.4      | -              | 7,7         | -   | -                             | -                            | 10.1            | 6               |
| Total zinc (ug/l)             | 105                        | -             | -             | 190           | 15                              | 20                 | -                  | -                | -        | -        | 27.2           | -           | 23  | 35                            | 15                           | 50              | -               |
| Total zinc (lbs/d)            | 12.9                       | -             | -             | 29.3          | 1                               | 1.4                | -                  | -                | -        | -        | 1.8            | -           | 1.9   | 2.9                           | 2                            | 4.8             | -               |
| <b>INTAKE</b>                 |                            |               |               |               |                                 |                    |                    |                  |          |          |                |             |   |                               |                              |                 |                 |
| Suspended solids (mg/l)       | -                          | -             | -             | -             | 13                              | 13                 | -                  | -                | 10       | -        | 11             | -           | 14.5  | 24                            | 5                            | 50              | -               |
| Suspended solids (lbs/d)      | -                          | -             | -             | -             | 841                             | 1963               | -                  | -                | 691      | -        | 761            | -           | 555   | 841                           | 341                          | 1963            | -               |
| BOD5 (mg/l)                   | -                          | -             | -             | -             | 1                               | 3                  | -                  | -                | -        | 3        | 4              | -           | 1.4   | 2                             | 1                            | 3               | -               |
| BOD5 (lbs/d)                  | -                          | -             | -             | -             | 99                              | 187                | -                  | -                | -        | 187      | 276            | -           | 88.4  | 101                           | 77                           | 190             | -               |
| Chlorides (mg/l)              | -                          | -             | -             | -             | 17                              | 20                 | -                  | -                | 17       | -        | 16             | -           | 17  | 28                            | 11                           | 48              | -               |

Table 4 - Comparison of the laboratory analytical results obtained by the facility and the Environmental Protection Bureau (EPB) from the split samples.

| Outfall                  | 001                 | MONGUAGON CREEK<br>SEDIMENT    |                     |
|--------------------------|---------------------|--------------------------------|---------------------|
| Sample type              | composite           | grab                           |                     |
| Date & Time<br>collected | from<br>to          | 05/22/90 0945<br>05/23/90 0845 | 05/23/90 0930       |
| Parameter (unit)         | Facility<br>results | E.P.B.<br>results              | Facility<br>results |
|                          | -----               | -----                          | -----               |
|                          | mg/l                | mg/l                           | mg/kg               |
| BOD-5                    | 19.0                | 19                             | -                   |
| Chloride                 | 40.6                | 41                             | -                   |
| Ammonia as N             | 1.5                 | 0.64                           | -                   |
| Suspended Solids         | 13.5                | 13                             | -                   |
| <br>                     |                     |                                |                     |
|                          | ug/l                | ug/l                           | mg/kg               |
| Phenols (4AAP)           | <260                | 26                             | -                   |
| Total Cadmium (Cd)       | -                   | -                              | 3.0      6.1        |
| Total Chromium (Cr)      | -                   | -                              | 56.0     183        |
| Total Copper (Cu)        | -                   | -                              | 59.0     148        |
| Total Nickel (Ni)        | -                   | -                              | 130.0    300        |
| Total Lead (Pb)          | -                   | -                              | 70.0     174        |
| Total Zinc (Zn)          | 120                 | 27.2                           | 780     3000        |

TABLE 5 - Analyses of Composite Samples from 1987

| Outfall            | 001           | INTAKE        |
|--------------------|---------------|---------------|
| Survey Period From | 11/02/87 1200 | 11/02/87 1245 |
| To                 | 11/03/87 1115 | 11/03/87 1140 |
| Computed Flow Rate | 11.5 MGD      |               |

|                                   | mg/l    | lbs/day | mg/l    | lbs/day |
|-----------------------------------|---------|---------|---------|---------|
| Alkalinity (CaCO <sub>3</sub> )   | 95      | NA      | 92      | NA      |
| BOD-5                             | 14      | 1342.7  | <2      | NA      |
| Calcium                           | 29.6    | 2838.9  | 26.9    | NA      |
| Chloride                          | 37      | 3548.7  | 12.5    | NA      |
| COD                               | 16      | 1534.6  | 4       | NA      |
| Total Cyanide                     | <0.005  | NA      | <0.005  | NA      |
| Magnesium                         | 8.1     | 776.9   | 7.7     | NA      |
| NO <sub>3</sub> + NO <sub>2</sub> | 0.34 HT | NA      | 0.27 HT | NA      |
| Ammonia as N                      | 0.29 HT | NA      | 0.2 HT  | NA      |
| Kjeldahl Nitrogen                 | 1.54 HT | NA      | 0.43 HT | NA      |
| Total Phosphorus                  | 0.12 HT | NA      | 0.03 HT | NA      |
| Suspended Solids                  | 10      | 959.1   | 9       | NA      |
| Dissolved Solids                  | 188     | 18031.1 | 148     | NA      |
| Sulfate                           | 22      | 2110.0  | 16.4    | NA      |
| TOC                               | 8.2 HT  | NA      | 2.1 HT  | NA      |

|                            | ug/l | lbs/day | ug/l | lbs/day |
|----------------------------|------|---------|------|---------|
| Phenols (4AAP)             | 24   | NA      | <10  | NA      |
| Total Cadmium (Cd)         | <20  | NA      | <20  | NA      |
| Total Chromium (Cr)        | <50  | NA      | <50  | NA      |
| Hexavalent Chromium (Cr+6) | <5   | NA      | <5   | NA      |
| Total Copper (Cu)          | <20  | NA      | <20  | NA      |
| Total Mercury (Hg)         | <0.5 | NA      | <0.5 | NA      |
| Total Nickel (Ni)          | <50  | NA      | <50  | NA      |
| Total Lead (Pb)            | <50  | NA      | <50  | NA      |
| Total Zinc (Zn)            | <50  | NA      | <50  | NA      |

TABLE 5 (cont.) - Analysis of Composite Samples from 1987

| Outfall            |      | 001      |      | INTAKE   |
|--------------------|------|----------|------|----------|
| Survey Period      | From | 11/02/87 | 1200 | 11/02/87 |
|                    | To   | 11/03/87 | 1115 | 11/03/87 |
| Computed Flow Rate |      | 11.5 MGD |      | 11.40    |

## GC/MS Base/Neutrals

| Dilution Factor             |   | 1 ug/l | lbs/day | 1.1 ug/l | lbs/day |
|-----------------------------|---|--------|---------|----------|---------|
| Bis(2-chloroethyl)ether     | < | 2      | NA      | <        | 2.2 NA  |
| 1,3-Dichlorobenzene         | < | 2      | NA      | <        | 2.2 NA  |
| 1,4-Dichlorobenzene         | < | 2      | NA      | <        | 2.2 NA  |
| 1,2-Dichlorobenzene         | < | 2      | NA      | <        | 2.2 NA  |
| Bis(2-chloroisopropyl)ether | < | 5      | NA      | <        | 5.5 NA  |
| N-Nitroso-di-n-propylamine  | < | 5      | NA      | <        | 5.5 NA  |
| Hexachloroethane            | < | 5      | NA      | <        | 5.5 NA  |
| Nitrobenzene                | < | 2      | NA      | <        | 2.2 NA  |
| Isophorone                  | < | 1      | NA      | <        | 1.1 NA  |
| Bis(2-chloroethoxy)methane  | < | 2      | NA      | <        | 2.2 NA  |
| 1,2,4-Trichlorobenzene      | < | 2      | NA      | <        | 2.2 NA  |
| Naphthalene                 | < | 1      | NA      | <        | 1.1 NA  |
| Hexachlorobutadiene         | < | 5      | NA      | <        | 5.5 NA  |
| Hexachlorocyclopentadiene   | < | 5      | NA      | <        | 5.5 NA  |
| 2-Chloronaphthalene         | < | 2      | NA      | <        | 2.2 NA  |
| Dimethylphthalate           | < | 2      | NA      | <        | 2.2 NA  |
| Acenaphthylene              | < | 1      | NA      | <        | 1.1 NA  |
| 2,6-Dinitrotoluene          | < | 5      | NA      | <        | 5.5 NA  |
| Acenaphthene                | < | 2      | NA      | <        | 2.2 NA  |
| 2,4-Dinitrotoluene          | < | 5      | NA      | <        | 5.5 NA  |
| Fluorene                    | < | 2      | NA      | <        | 2.2 NA  |
| Diethylphthalate            | < | 2      | NA      | <        | 2.2 NA  |
| 4-Chlorodiphenyl ether      | < | 5      | NA      | <        | 5.5 NA  |
| N-Nitrosodiphenyl amine     | < | 2      | NA      | <        | 2.2 NA  |
| 1,2-Diphenylhydrazine       | < | 2      | NA      | <        | 2.2 NA  |
| 4-Bromodiphenyl ether       | < | 5      | NA      | <        | 5.5 NA  |
| Hexachlorobenzene           | < | 5      | NA      | <        | 5.5 NA  |
| Phenanthrene                | < | 1      | NA      | <        | 1.1 NA  |
| Anthracene                  | < | 1      | NA      | <        | 1.1 NA  |
| Di-n-butylphthalate         | < | 1      | NA      | <        | 1.1 NA  |
| Fluoranthene                | < | 1      | NA      | <        | 1.1 NA  |
| * Benzidine                 | < | 15     | NA      | <        | 16.5 NA |
| Pyrene                      | < | 1      | NA      | <        | 1.1 NA  |
| Butyl benzyl phthalate      | < | 2      | NA      | <        | 2.2 NA  |
| Benzo(a)anthracene          | < | 2      | NA      | <        | 2.2 NA  |
| * 3,3'-Dichlorobenzidine    | < | 10     | NA      | <        | 11 NA   |
| Chrysene                    | < | 2      | NA      | <        | 2.2 NA  |
| Bis(2-ethylhexyl)phthalate  | < | 2      | NA      | <        | 2.2 NA  |
| Di-n-octylphthalate         | < | 2      | NA      | <        | 2.2 NA  |
| Benzo(b)fluoranthene        | < | 2      | NA      | <        | 2.2 NA  |
| Benzo(k)fluoranthene        | < | 2      | NA      | <        | 2.2 NA  |
| Benzo(a)pyrene              | < | 2      | NA      | <        | 2.2 NA  |
| Indeno(1,2,3-c,d)pyrene     | < | 5      | NA      | <        | 5.5 NA  |
| Dibenzo(a,h)anthracene      | < | 5      | NA      | <        | 5.5 NA  |
| Benzo(g,h,i)perylene        | < | 5      | NA      | <        | 5.5 NA  |

\* Seldomly encountered, reported semi-quantitatively.

TABLE 5 (cont.) - Analysis of Composite Samples from 1987

|                    |          |               |
|--------------------|----------|---------------|
| Outfall            | 001      | INTAKE        |
| Survey Period      | From     | 11/02/87 1200 |
|                    | To       | 11/03/87 1115 |
| Computed Flow Rate |          | 11/03/87 1140 |
|                    | 11.5 MGD |               |

## Scan 3 - Chlorinated Hydrocarbons, PCBs &amp; Organochlorine Pesticides

| Dilution Factor            | 1       | 1.1     | 1       | 1.1     |
|----------------------------|---------|---------|---------|---------|
|                            | ug/l    | lbs/day | ug/l    | lbs/day |
| 1,3-Dichlorobenzene        | < 0.1   | NA      | < 0.11  | NA      |
| 1,4-Dichlorobenzene        | 0.49    | NA      | < 0.11  | NA      |
| 1,2-Dichlorobenzene        | < 0.44  | NA      | < 0.11  | NA      |
| Hexachloroethane           | < 0.01  | NA      | < 0.011 | NA      |
| 1,3,5-Trichlorobenzene     | < 0.044 | NA      | < 0.011 | NA      |
| 1,2,4-Trichlorobenzene     | < 0.66  | NA      | < 0.011 | NA      |
| 1,2,3-Trichlorobenzene     | < 0.22  | NA      | < 0.011 | NA      |
| Hexachlorobutadiene        | < 0.01  | NA      | < 0.011 | NA      |
| 1,2,4,5-Tetrachlorobenzene | < 0.01  | NA      | < 0.011 | NA      |
| Hexachlorocyclopentadiene  | < 0.01  | NA      | < 0.011 | NA      |
| 2-Chloronaphthalene        | < 0.2   | NA      | < 0.22  | NA      |
| 1,2,3,4-Tetrachlorobenzene | < 0.01  | NA      | < 0.011 | NA      |
| Pentachlorobenzene         | < 0.01  | NA      | < 0.011 | NA      |
| a-BHC                      | < 0.01  | NA      | < 0.011 | NA      |
| Hexachlorobenzene          | < 0.01  | NA      | < 0.011 | NA      |
| b-BHC                      | < 0.01  | NA      | < 0.011 | NA      |
| g-BHC (lindane)            | < 0.01  | NA      | < 0.011 | NA      |
| Pentachloronitrobenzene    | < 0.01  | NA      | < 0.011 | NA      |
| d-BHC                      | < 0.01  | NA      | < 0.011 | NA      |
| Heptachlor                 | < 0.01  | NA      | < 0.011 | NA      |
| Aldrin                     | < 0.01  | NA      | < 0.011 | NA      |
| Heptachlor epoxide         | < 0.01  | NA      | < 0.011 | NA      |
| g-Chlordane                | < 0.01  | NA      | < 0.011 | NA      |
| Endosulfan I               | < 0.01  | NA      | < 0.011 | NA      |
| a-Chlordane                | < 0.01  | NA      | < 0.011 | NA      |
| 4,4'-DDE                   | < 0.01  | NA      | < 0.011 | NA      |
| Endrin                     | < 0.01  | NA      | < 0.011 | NA      |
| Dieldrin                   | < 0.22  | NA      | < 0.011 | NA      |
| 4,4'-DDD                   | < 0.01  | NA      | < 0.011 | NA      |
| 1,4'-DDT                   | < 0.01  | NA      | < 0.011 | NA      |
| 4,4'-DDT                   | < 0.01  | NA      | < 0.011 | NA      |
| Hexabromobenzene           | < 0.01  | NA      | < 0.011 | NA      |
| Methoxychlor               | < 0.01  | NA      | < 0.011 | NA      |
| Mirex                      | < 0.01  | NA      | < 0.011 | NA      |
| Aroclor 1242               | < 0.05  | NA      | < 0.055 | NA      |
| Aroclor 1254               | < 0.05  | NA      | < 0.055 | NA      |
| Aroclor 1260               | < 0.05  | NA      | < 0.055 | NA      |
| *Aroclor 1016              | < 0.05  | NA      | < 0.055 | NA      |
| *Aroclor 1221              | < 0.05  | NA      | < 0.055 | NA      |
| *Aroclor 1232              | < 0.05  | NA      | < 0.055 | NA      |
| *Aroclor 1248              | < 0.05  | NA      | < 0.055 | NA      |
| *Aroclor 1262              | < 0.05  | NA      | < 0.055 | NA      |
| *Aroclor 1268              | < 0.05  | NA      | < 0.055 | NA      |
| BP-6 (PBB)                 | < 0.05  | NA      | < 0.055 | NA      |
| *Toxaphene                 | < 0.05  | NA      | < 0.055 | NA      |

\* Seldomly encountered, reported semi-quantitatively

TABLE 5 (cont.) - Analysis of Composite Samples from 1987

| Outfall            | 001                   | INTAKE        |
|--------------------|-----------------------|---------------|
| Survey Period      | From<br>11/02/87 1200 | 11/02/87 1245 |
|                    | To<br>11/03/87 1115   | 11/03/87 1140 |
| Computed Flow Rate | 11.5 MGD              |               |

## Scan 8 - Phenols

| Dilution Factor            | 1.1  | 1       |         |
|----------------------------|------|---------|---------|
|                            | ug/l | lbs/day | ug/l    |
|                            |      |         | lbs/day |
| Phenol                     | <    | 11      | NA      |
| 2-Chlorophenol             | <    | 11      | NA      |
| 2-Nitrophenol              | <    | 11      | NA      |
| 2,4-Dimethylphenol         | <    | 11      | NA      |
| 2,4-Dichlorophenol         | <    | 11      | NA      |
| 4-Chloro-3-methylphenol    | <    | 11      | NA      |
| * 3-Phenylpropionic acid   | <    | 44      | NA      |
| 2,4,6-Trichlorophenol      | <    | 11      | NA      |
| 2,4,5-Trichlorophenol      | <    | 11      | NA      |
| 2,4-Dinitrophenol          | <    | 44      | NA      |
| 4-Nitrophenol              | <    | 44      | NA      |
| 2-Methyl-4,6-dinitrophenol | <    | 44      | NA      |
| Pentachlorophenol          | <    | 44      | NA      |

\* Seldom encountered, reported semi-quantitatively.

TABLE 6 - Analyses of Grab Samples from 1987

| Outfall        | 001      | 001      | 001      | 001      |
|----------------|----------|----------|----------|----------|
| Date Collected | 11/02/87 | 11/02/87 | 11/03/87 | 11/03/87 |
| Time Collected | 1210     | 1510     | 0910     | 1105     |

|                   | mg/l    | mg/l    | mg/l    | mg/l    |
|-------------------|---------|---------|---------|---------|
| Dissolved Oxygen  | 9.6     | 9.5     | 9       | -       |
| BOD-5             | 7 LC    | 13 LC   | 5 LC    | 16 LC   |
| COD               | 16      | 17      | 9       | 30      |
| N03 + N02         | 0.34 HT | 0.33 HT | 0.32 HT | 0.35 HT |
| Ammonia as N      | 0.3 HT  | 0.31 HT | 0.28 HT | 0.31 HT |
| Kjeldahl Nitrogen | 1.13 HT | 1.38 HT | 0.85 HT | 3.1 HT  |
| Oil and Grease    | 4.7     | 3.6     | <2      | 2.3     |
| Total Phosphorus  | 0.06 HT | 0.05 HT | 0.05 HT | 0.32 HT |
| Suspended Solids  | 13      | 8       | 10      | 20      |
| Dissolved Solids  | 228     | 180     | 200     | 196     |
| TOC               | 6.4 HT  | 7.8 HT  | 4.4 HT  | 13 HT   |

| Outfall        | INTAKE   | INTAKE   | INTAKE   | INTAKE   |
|----------------|----------|----------|----------|----------|
| Date Collected | 11/02/87 | 11/02/87 | 11/03/87 | 11/03/87 |
| Time Collected | 1250     | 1540     | 0945     | 1135     |

|                   | mg/l    | mg/l    | mg/l    | mg/l    |
|-------------------|---------|---------|---------|---------|
| Dissolved Oxygen  | 11      | 10.8    | 11      | -       |
| BOD-5             | <2      | <2      | <2      | <2      |
| COD               | 3       | <3      | 3       | <3      |
| N03 + N02         | 0.27 HT | 0.27 HT | 0.27 HT | 0.26 HT |
| Ammonia as N      | 0.18 HT | 0.16 HT | 0.24 HT | 0.24 HT |
| Kjeldahl Nitrogen | 0.5 HT  | 0.38 HT | 0.45 HT | 0.41 HT |
| Oil and Grease    | 3.1     | 2.7     | <2      | 3.3     |
| Total Phosphorus  | 0.03 HT | 0.02 HT | 0.03 HT | 0.03 HT |
| Suspended Solids  | 9       | 10      | 10      | 10      |
| Dissolved Solids  | 176     | 152     | 148     | 148     |
| TOC               | 2.1 HT  | 2.1 HT  | 2.3 HT  | 2.1 HT  |

TABLE 6 (cont.) - Analysis of Grab Samples from 1987

| Outfall        | 001      | 001      | INTAKE   | INTAKE   |
|----------------|----------|----------|----------|----------|
| Date Collected | 11/02/87 | 11/02/87 | 11/02/87 | 11/02/87 |
| Time Collected | 1210     | 1510     | 1250     | 1540     |

## Scan 1 - Purgeable Halocarbons

| Dilution Factor           | 1    | 1    | 1    | 1         |
|---------------------------|------|------|------|-----------|
|                           | ug/l | ug/l | ug/l | ug/l      |
| Vinyl chloride            | < 5  | < 5  | < 5  | < 5       |
| Bromomethane              | < 5  | < 5  | < 5  | < 5       |
| Chloroethane              | < 5  | < 5  | < 5  | < 5       |
| Trichlorofluoromethane    | < 5  | < 5  | < 5  | < 5       |
| 1,1-Dichloroethene        | < 1  | < 1  | < 1  | < 1       |
| Methylene chloride        | < 5  | < 5  | < 5  | < 5       |
| trans-1,2-Dichloroethene  | < 1  | < 1  | < 1  | < 1       |
| 1,1-Dichloroethane        | < 1  | < 1  | < 1  | < 1       |
| cis-1,2-Dichloroethene    | < 1  | < 1  | < 1  | < 1       |
| Chloroform                | 2.5  | 3    | < 1  | < 1       |
| 1,1,1-Trichloroethane     | < 1  | < 1  | < 1  | < 1.2 INT |
| Carbon Tetrachloride      | < 1  | < 1  | < 1  | < 1       |
| 1,2-Dichloroethane        | < 1  | < 1  | < 1  | < 1       |
| Trichloroethene           | < 1  | < 1  | < 1  | < 1       |
| 1,2-Dichloropropane       | < 1  | < 1  | < 1  | < 1       |
| Bromodichloromethane      | < 1  | < 1  | < 1  | < 1       |
| cis-1,3-Dichloropropene   | < 1  | < 1  | < 1  | < 1       |
| trans-1,3-Dichloropropene | < 1  | < 1  | < 1  | < 1       |
| 1,1,2-Trichloroethane     | 8.5  | 8.5  | < 1  | < 1       |
| Tetrachloroethene         | < 1  | < 1  | < 1  | < 1       |
| Dibromochloromethane      | 2    | 1.8  | < 1  | < 1       |
| Chlorobenzene             | < 5  | < 5  | < 5  | < 5       |
| Bromoform                 | < 1  | 1.1  | < 1  | < 1       |
| 1,1,2,2-Tetrachloroethane | < 1  | < 1  | < 1  | < 1       |

## Scan 2 - Purgeable Aromatic Hydrocarbons

| Dilution Factor              | 1      | 1      | 1    | 1    |
|------------------------------|--------|--------|------|------|
|                              | ug/l   | ug/l   | ug/l | ug/l |
| Benzene                      | < 1    | < 1    | < 1  | < 1  |
| Toluene                      | < 1    | < 1    | < 1  | < 1  |
| Ethylbenzene                 | < 1    | < 1    | < 1  | < 1  |
| Xylene isomers (o, m, and p) | 1.5 UC | 1.4 UC | < 1  | < 1  |

TABLE 6 (cont.) - Analyses of Grab Samples from 1987

|   |                             |
|---|-----------------------------|
| Type of Sludge                            | MONGUAGON CREEK<br>SEDIMENT |
| Date Collected                            | 11/03/87                    |
| Time Collected                            | 0930                        |
| COD in Sediment (mg/kg) dry               | 180000                      |
| Kjeldahl nitrogen in Sediment (mg/kg) dry | 2900                        |
| Total phosphorus in Sediment (mg/kg) dry  | 55                          |
| Phenolics in Sediment (mg/kg) dry         | 12                          |

TABLE 6 (cont.) - Analysis of Grab Samples from 1987

|                |                 |
|----------------|-----------------|
| Outfall        | MONGUAGON CREEK |
|                | SEDIMENT        |
| Date Collected | 11/03/87        |
| Time Collected | 0930            |

## GC/MS Base/Neutrals

| Dilution Factor             | 125<br>ug/Kg |
|-----------------------------|--------------|
| Bis(2-chloroethyl)ether     | < 250        |
| 1,3-Dichlorobenzene         | < 250        |
| 1,4-Dichlorobenzene         | < 250        |
| 1,2-Dichlorobenzene         | < 250        |
| Bis(2-chloroisopropyl)ether | < 625        |
| N-Nitroso-di-n-propylamine  | < 625        |
| Hexachloroethane            | < 625        |
| Nitrobenzene                | < 250        |
| Isophorone                  | < 125        |
| Bis(2-chloroethoxy)methane  | < 250        |
| 1,2,4-Trichlorobenzene      | < 250        |
| Naphthalene                 | 1800         |
| Hexachlorobutadiene         | < 625        |
| Hexachlorocyclopentadiene   | < 625        |
| 2-Chloronaphthalene         | < 250        |
| Dimethylphthalate           | < 250        |
| Acenaphthylene              | < 125        |
| 2,6-Dinitrotoluene          | < 625        |
| Acenaphthene                | < 250        |
| 2,4-Dinitrotoluene          | < 625        |
| Fluorene                    | < 250        |
| Diethylphthalate            | < 250        |
| 4-Chlorodiphenyl ether      | < 625        |
| N-Nitrosodiphenyl amine     | < 250        |
| 1,2-Diphenylhydrazine       | < 250        |
| 4-Bromodiphenyl ether       | < 625        |
| Hexachlorobenzene           | < 625        |
| Phenanthrene                | < 125        |
| Anthracene                  | < 125        |
| Di-n-butylphthalate         | < 125        |
| Fluoranthene                | < 125        |
| * Benzidine                 | < 1875       |
| Pyrene                      | < 125        |
| Butyl benzyl phthalate      | < 250        |
| Benzo(a)anthracene          | < 250        |
| * 3,3'-Dichlorobenzidine    | < 1250       |
| Chrysene                    | < 250        |
| Bis(2-ethylhexyl)phthalate  | < 250        |
| Di-n-octylphthalate         | < 250        |
| Benzo(b)fluoranthene        | < 250        |
| Benzo(k)fluoranthene        | < 250        |
| Benzo(a)pyrene              | < 250        |
| Indeno(1,2,3-c,d)pyrene     | < 625        |
| Dibenzo(a,h)anthracene      | < 625        |
| Benzo(g,h,i)perylene        | < 625        |

\* Seldomly encountered, reported semi-quantitatively.

TABLE 6 (cont.) - Analysis of Grab Samples from 1987

Outfall

MONGUAGON CREEK  
SEDIMENT

Sample collection date and time 11/03/87 0930

Scan 3 - Chlorinated Hydrocarbons, PCBs &  
Organochlorine Pesticides

| Dilution Factor         |      | 12000  |         |
|-------------------------|------|--------|---------|
|                         | ug/l |        | lbs/day |
| 1,3-Dichlorobenzene     | <    | 1200   | NA      |
| 1,4-Dichlorobenzene     | <    | 1200   | NA      |
| 1,2-Dichlorobenzene     | <    | 1200   | NA      |
| Hexachloroethane        | <    | 120    | NA      |
| 1,2,4-Trichlorobenzene  | <    | 120    | NA      |
| Hexachlorobutadiene     | <    | 120    | NA      |
| 2-Chloronaphthalene     | <    | 1200   | NA      |
| Hexachlorobenzene       | <    | 160    | NA      |
| g-BHC (lindane)         | <    | 120    | NA      |
| Pentachloronitrobenzene | <    | 120    | NA      |
| d-BHC                   | <    | 120    | NA      |
| Heptachlor              | <    | 140    | NA      |
| Aldrin                  | <    | 120    | NA      |
| Heptachlor epoxide      | <    | 120    | NA      |
| g-Chlordane             | <    | 120    | NA      |
| a-Chlordane             | <    | 120    | NA      |
| 4,4'-DDE                | <    | 120    | NA      |
| 4,4'-DDD                | <    | 120    | NA      |
| 1,4'-DDT                | <    | 120    | NA      |
| 4,4'-DDT                | <    | 120    | NA      |
| Hexabromobenzene        | <    | 120    | NA      |
| Methoxychlor            | <    | 120    | NA      |
| Mirex                   |      | 190 PS | NA      |
| Aroclor 1242            | <    | 1200   | NA      |
| Aroclor 1254            | <    | 1200   | NA      |
| Aroclor 1260            | <    | 1200   | NA      |
| *Aroclor 1016           | <    | 1200   | NA      |
| *Aroclor 1221           | <    | 1200   | NA      |
| *Aroclor 1232           | <    | 1200   | NA      |
| *Aroclor 1248           | <    | 1200   | NA      |
| *Aroclor 1262           | <    | 1200   | NA      |
| *Aroclor 1268           | <    | 1200   | NA      |
| BP-6 (PBB)              | <    | 120    | NA      |
| *Toxaphene              | <    | 1200   | NA      |

\* Seldomly encountered, reported semi-quantitatively

Table 7 - Sample Preservation

| Parameter                                     | Preservative   |
|---|--|
| COD/TOC/Phenol/Nutrients<br>(Chlorine Absent) | 5 drops conc. H <sub>2</sub> SO <sub>4</sub> /250 ml (to pH <2)  |
| Phenols (Chlorine Present)                    | Dechlorinate w/ferrous ammonium sulphate<br>(0.141 N)<br>1 drop/mg/l Cl <sub>2</sub> /250 ml. H <sub>2</sub> SO <sub>4</sub> to pH <2. |
| Cyanide/Thiocyanates                          | Dechlorinate if needed with ascorbic acid<br>(0.6 g/l), 10 drops 10 N NaOH<br>(to pH >12)/250 ml.                                      |
| Dissolved Oxygen (D.O.)                       | Fixed on site.   |
| Total Metals                                  | 2 ml 1:1 HNO <sub>3</sub> /250 ml (to pH <2).  |
| Dissolved Metals<br>(Field Filtered)          | 2 ml 1:1 HNO <sub>3</sub> /250 ml (to pH <2).  |
| Microbiology                                  | 2 drops 10% sodium thiosulfate/125 ml to<br>dechlorinate sample.   |
| Oil & Grease                                  | 10 drops conc. H <sub>2</sub> SO <sub>4</sub> /250 ml (to pH <2)   |
| Sulfides                                      | 10 drops 1M ZnAc/250 ml., 1 drop 10 N<br>NaOH to pH 9/250 ml.  |
| Base-neutral & Acid<br>Extractables           | Dechlorinate if needed with sodium<br>thiosulfate (1 drop 0.141 N/mg/l<br>Cl <sub>2</sub> /250 ml).                                    |
| Purgeable Organics                            | 5 drops conc. HCl (to pH <2)   |

Samples preserved as required, cooled to 4 degrees Centigrade with chain of custody maintained.

#### Lab Letter Codes

- HT The recommended maximum laboratory holding time was exceeded before analysis.
- LC Laboratory conditions during analysis were not optimum (incorrect incubation conditions, equipment performance below normal, etc.).
- LP Quality control indicated that the precision of the result may have been less than normal.
- PS Possible interference may have affected the accuracy of the laboratory result.

#### Symbols

- < The substance, if present, is at a concentration below this value.
- Analysis was not done for this parameter.

NA Not applicable.

Survey and Report by: Hae-jin Yoon  
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